

Claims:

1. A fluid dynamic bearing defined by the interface of a hub and a sleeve, the hub having a vertical shaft portion configured to rotate within the sleeve, and a horizontal body portion configured to rotate above the sleeve, the bearing comprising:
 - a first gap region between the shaft portion of the hub and the sleeve;
 - a second gap region between the horizontal body portion of the hub and the sleeve;
 - a capillary seal within the first gap proximate to the second gap;
 - a volume of lubricating fluid within the first gap; and
 - an air pumping groove pattern disposed along the second gap, the air pumping groove pattern forming a high air pressure region in the second gap when the shaft portion of the hub is rotated within the sleeve.
2. The fluid dynamic bearing of claim 1, wherein:
 - the first gap region comprises a substantially vertical gap; and
 - the second gap region comprises a substantially horizontal gap portion.
3. The fluid dynamic bearing of claim 2, wherein:
 - the air pumping groove pattern is disposed in the horizontal gap portion of the second gap region.
4. The fluid dynamic bearing of claim 2, wherein the hub further comprises a radial shoulder for receiving a disc.
5. The fluid dynamic bearing of claim 4, wherein the hub and sleeve are part of a spindle motor for a disc drive system.
6. The fluid dynamic bearing of claim 2, wherein the shaft portion is adapted to rotate within the sleeve on a counterplate.

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7. The fluid dynamic bearing of claim 4, wherein the air pumping groove pattern defines at least one groove formed in a top surface of the sleeve.
8. The fluid dynamic bearing of claim 1, wherein the air pumping groove pattern defines at least one groove formed in a bottom surface of the horizontal body portion of the hub.
9. The fluid dynamic bearing of claim 5, wherein the air pumping groove pattern defines a spiral pattern.
10. The fluid dynamic bearing of claim 9, wherein the spiral pattern is formed in a top surface of the sleeve.
11. A spindle motor for use in a disc drive, the spindle motor comprising a sleeve, and a hub rotating relative to the sleeve, the hub having a vertical shaft portion configured to rotate within the sleeve, and a horizontal body portion configured to rotate above the sleeve, and the spindle motor having a bearing surface defined by the interface of the hub and the sleeve, wherein the bearing surface comprises:
 - a vertical gap between the shaft portion of the hub and the sleeve;
 - a horizontal gap between the horizontal body portion of the hub and the sleeve;
 - a capillary seal within the vertical gap proximate to the horizontal gap;
 - a volume of lubricating fluid within the vertical gap; and
 - an air pumping groove pattern disposed along the horizontal gap, the air pumping groove pattern forming a high pressure region in the horizontal gap when the shaft portion of the hub is rotated within the sleeve.
12. The spindle motor of claim 11, wherein the hub further comprises a radial shoulder for receiving a disc.

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13. The spindle motor of claim 12, wherein:

the shaft portion is adapted to rotate within the sleeve on a counterplate; and
the lubricating fluid is oil.

14. The spindle motor of claim 11, wherein the air pumping groove pattern defines at least one groove formed in a top surface of the sleeve.

15. The spindle motor of claim 11, wherein the air pumping groove pattern defines at least one groove formed in a bottom surface of the horizontal body portion of the hub.

16. The fluid dynamic bearing of claim 11, wherein the air pumping groove pattern defines a spiral pattern.

17. The fluid dynamic bearing of claim 16, wherein the spiral pattern is formed in a top surface of the sleeve.

18. The fluid dynamic bearing of claim 12, wherein at least a portion of opposing hub and sleeve surfaces along the horizontal gap are coated with a non-moisturizing substance.

19. The fluid dynamic bearing of claim 12, wherein the horizontal gap is approximately 0.16 millimeters in height.